JULY 4, 1983

CHEMICAL & ENGINEERING

NEWS

Biochemistry—a C&EN Science Update Page 18

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Salaries, unemployment both up moderately for chemists

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CHEMICAL & ENGINEERING NEWS

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News of the Week

■ **An NAS study directly links acid rain to power plant emissions but admits the scientific data are too weak at present to clarify other pertinent questions.** **Page 6**

■ **Supreme Court's ruling allows states to tax the international income of U.S. firms that conduct business overseas.** **Page 7**

■ **Hercules will venture much further into the high-technology aerospace business by acquiring Simmonds Precision Products.** **Page 7**

Business

Chemical industry's second-quarter performance has surpassed most expectations; outlook for second half is even better. **Page 10**

Government

Congress has reached quick agreement on a budget resolution for fiscal 1984 and is moving fast on other issues. **Page 14**

Science

Biochemical research is making headway in solving previously intractable biological problems by using new methods. **Page 18**

Science Policy

Fresh ideas in science policy involving energy technology and innovation are put forth by right-wing think tank. **Page 25**

Technology

Newly developed zirconium catalysts are extremely active and accomplish rapid polymerization of olefins. **Page 29**

Education

Use of microcomputers in chemical education is being promoted by a National Science Foundation development project. **Page 30**

Books

Divergent views on the desirability of utilizing nuclear energy are presented in "Nuclear Power: Both Sides" by Michio Kaku and Jennifer Trainer. **Page 38**

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Salary Survey

Chemists' unemployment was higher this spring than at any time since 1972; their salaries were only moderately above a year ago. **Page 33**

Unemployment Highest Among Chemists Since 1972

Salaries make modest gain in past year, largely in step with cost of living, annual survey of ACS members indicates

For the second year in a row, unemployment has climbed perceptibly for U.S. chemists. As of last March, 2.2% of the chemists who are members of the American Chemical Society were jobless and looking for work, up from just 1.5% a year earlier. The unemployment rate for chemists this year is double what it was two years ago. Not since 1972, when unemployment among ACS chemists was 3.2%, has the rate been as high as 2%.

Other figures from the latest annual survey of the economic status of ACS members, conducted annually by the ACS Office of Manpower Studies, also point to a weaker job market this year for the chemical profession. The fraction of chemists employed full-time is lowest also since 1972, reflecting not only increased joblessness but also an increase among chemists working part time (1.6%, up from 1.4% a year ago) and those who are doing postdoctoral work (2.6%, up from 2.2% in March 1982).

Despite the increase, however, unemployment among chemists is relatively low compared to that of the nation's workforce overall. The unemployment rate of the U.S. civilian labor force peaked at 10.8% last December in the throes of the worst business recession since World War II. It had declined to 10.3% by March—and, with business clearly on the upswing this spring, to 10.1% by May.

Although the recession last year cost relatively few chemists their jobs, its impact probably was more widespread in affecting salaries, which for the second consecutive year rose only moderately. The median salary for Ph.D. chemists, for example, increased 7% to $40,000. (The median is the salary that is exceeded by 50% of the individuals responding to the ACS survey.) The increase during the past year for Ph.D.s is the same as that the year before but well below the 12% gain in median salary that they won between 1980 and 1981.

For chemists lacking a Ph.D., the increase in salaries during the past year was even less favorable. Salaries for those whose highest degree is a B.S. were 5% higher this year, at the median, than in 1982; they had been up 4% last year and 10% the year before that. For chemists with an M.S., the median was only 4% higher this

Although up this year, unemployment remains relatively low for ACS members . . .

	CHEMISTS									
		By sex		By highest degree			By minority status		Chemical	All ACS
Employment status[a]	Total	Men	Women	B.S.	M.S.	Ph.D.	Minority[b]	Nonminority	engineers	members[c]
Employed full time	92.4%	93.6%	85.0%	93.5%	93.6%	91.5%	88.8%	92.7%	92.0%	92.1%
Employed part time	1.6	1.1	4.5	1.5	2.2	1.5	1.5	1.6	1.6	1.7
Postdoctoral or fellowship	2.6	2.3	4.4	0.3	0.6	4.3	6.0	2.3	0.5	2.2
Unemployed										
Seeking employment	2.2	2.0	3.3	3.1	2.1	1.8	3.3	2.1	3.2	2.5
Not seeking employment	1.2	0.9	2.8	1.6	1.5	0.9	0.5	1.3	2.7	1.5

a As of March 1, 1983. b Black, American Indian, Alaskan native, Asian or Pacific, Hispanic, or other. c Includes members whose highest degree and present work are in neither chemistry nor chemical engineering. Source: ACS survey

. . . but salaries increased only moderately from the year before

												Annual change		
$ Thousands	1983	1982	1981	1980	1979	1978	1977	1976	1975	1974	1973	1982–83	1978–83	1973–83
CHEMISTS' MEDIAN SALARIES[a]														
B.S.	$30.0	$28.5	$27.5	$25.0	$23.5	$22.0	$21.0	$19.8	$19.0	$17.5	$16.8	5%	6%	6%
M.S.	33.0	31.6	30.0	26.0	25.0	24.0	22.0	20.5	19.8	18.4	17.5	4	7	7
Ph.D.	40.0	37.5	35.0	31.2	29.0	27.4	26.0	24.7	23.0	21.7	20.5	7	8	7
All chemists	36.0	34.7	32.0	28.9	na	na	na	na	na	na	na	4	na	na

a As of March 1, 1983. na = not available. Source: ACS survey

At some experience levels, salaries of chemists in top 10% are double those in bottom 10%

Years since B.S. degree	Annual salaries of nonacademic chemists ($ thousands)[a]										
	0 to 1	2 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 or more	Overall
B.S.											
90%	$27.5	$28.6	$34.0	$40.1	$49.1	$52.4	$60.0	$60.0	$57.3	$64.8	$50.0
75%	23.2	25.0	30.0	35.0	40.5	44.4	49.4	49.0	46.8	52.6	39.7
Median	20.0	22.0	25.8	30.0	35.0	38.0	41.0	40.0	39.0	43.0	30.0
25%	15.5	19.1	22.0	25.5	28.0	31.2	33.0	34.0	32.0	35.0	24.0
10%	14.0	16.0	19.0	21.6	23.9	25.6	26.4	26.6	28.1	26.1	20.0
M.S.											
90%	—	29.0	35.0	41.8	50.1	55.0	62.0	58.6	70.0	60.0	52.0
75%	—	27.0	31.8	37.0	43.0	44.8	50.0	50.8	50.6	46.2	43.0
Median	—	24.5	27.0	31.2	35.3	39.3	42.9	42.0	41.7	38.2	35.0
25%	—	21.0	23.5	27.0	30.8	33.1	35.1	36.0	35.0	29.9	28.0
10%	—	18.4	20.0	23.9	26.3	28.5	27.0	30.4	29.8	24.0	23.0
Ph.D.											
90%	—	—	40.0	48.2	58.0	65.0	70.0	72.0	76.5	72.0	65.0
75%	—	—	37.6	43.0	50.0	55.8	60.0	62.0	64.2	59.0	53.3
Median	—	—	34.8	38.0	43.0	48.0	50.9	52.8	53.6	46.0	44.0
25%	—	—	32.6	34.5	37.5	41.0	44.2	45.0	44.0	38.4	36.9
10%	—	—	30.0	31.0	32.0	35.6	36.4	37.8	38.0	33.0	32.3

a As of March 1, 1983. **How to read this table:** Using, as an example, B.S. chemists two to four years after having received their B.S. degree: 90% of these chemists have annual salaries of $28,600 or less, 75% have salaries of $25,000 or less, 50% have salaries of $22,000 or less, 25% have salaries of $19,100 or less, and 10% have salaries of $16,000 or less, as of March 1, 1983. **Source:** ACS survey

year, following a 5% rise in 1982 and one of 15% in 1981.

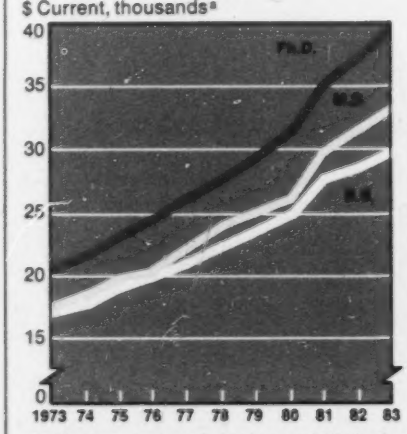
Inflation, however, has moderated considerably during the past year or so. Consequently, the long erosion in the purchasing power of chemists' salaries over the past decade finally appears to have eased. Consumer prices increased slightly less than 4% between March 1982 and March 1983. In constant dollars, therefore, Ph.D. chemists this year are 3% better off than they were a year ago, while chemists with lesser degrees just about held their own. Even so, after factoring in the effect of inflation, chemists salaries are 15 to 20% lower than they were 10 years ago. In fact, they are about at the same level as they were two decades ago.

The median salary provides only a very broad-brush indication of what an individual chemist's salary is likely to be, of course. Experience, employer, and type of work performed all are important factors affecting the level of earnings.

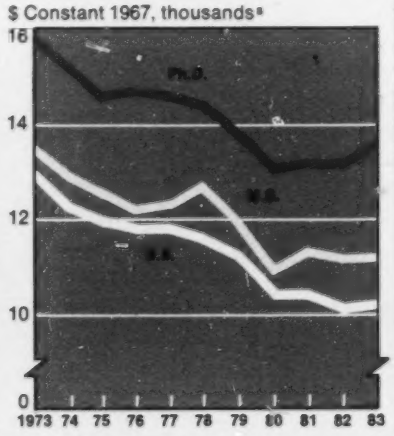
Chemists working in industry, for example, typically have higher salaries than those teaching in colleges or universities. Thus, the median salary for a Ph.D. doing research in industry, at any given level of experience, is higher than that of a chemistry professor in a Ph.D.-granting college or university and higher still than that for a professor teaching at a school that does not offer a Ph.D. in chemistry. For example, the median salary for Ph.D. chemists working at applied research in industry, 20 to 30 years after having received their B.S. degree, is roughly 10% greater than that of a full professor who has been out of undergraduate school for a similar length of time. Compared to a full professor in a non-Ph.D.-granting school, the industrial researcher has a median salary nearly 50% higher.

In industry, moreover, chemists who have moved into management positions—either in management of research and development or general management—typically have higher salaries than those directly involved with research and development. And industrial chemists to whom few or no subordinates report earn appreciably less than those to whom several people report. Thus, the 30% of industrial chemists who supervise nobody have a median salary that is less than half that of the 3% who su-

The increase in chemists' salaries during the 1980s...



...has been largely wiped out by inflation



a Median annual salary of chemists as of March of each year. **Source:** ACS survey

Differences between salaries of men and women is narrowest for government chemists

Mean salary, $ thousands[a]	B.S. All chemists	B.S. Men	B.S. Women	B.S. Women as % of men	M.S. All chemists	M.S. Men	M.S. Women	M.S. Women as % of men	Ph.D. All chemists	Ph.D. Men	Ph.D. Women	Ph.D. Women as % of men
EMPLOYER												
Private industry	$34.7	$35.4	$30.0	85%	$38.2	$39.0	$32.8	84%	$47.7	$47.9	$41.2	86%
College/university	—	—	—	—	—	—	—	—	33.7	34.1	28.6	84
Government	30.7	31.5	26.7	85	—	—	—	89	43.3	43.5	40.0	92
Other nonacademic	28.9	29.8	24.5	82	—	—	—	—	—	—	—	—

a As of March 1, 1983; to facilitate comparison, salaries are adjusted for differences in the average experience for each group. Source: ACS survey

Salaries of industrial chemists are highest in the oil industry

Industry	% of industrial chemists: All chemists	B.S.	M.S.	Ph.D.	Mean salary ($ thousands)[a]: B.S.	M.S.	Ph.D.
Chemical	31%	25%	27%	37%	$35.0	$39.1	$47.4
Pharmaceutical	18	16	21	18	32.3	35.0	48.0
Petroleum	7	6	5	8	37.0	45.5	54.2
Coatings	6	9	7	4	33.5	37.6	44.7
Food	4	5	4	3	31.1	39.5	46.0
Metals and minerals	3	4	3	2	31.3	38.2	43.2
Rubber	2	4	3	1	35.5	38.4	46.2
Paper	2	1	2	2	30.6	33.0	43.1
Other manufacturing	20	22	21	19	33.1	37.4	46.1
Nonmanufacturing	6	8	8	5	28.5	36.4	46.4

a As of March 1, 1983; to facilitate comparison, salaries are adjusted for differences in the average experience for each group. Source: ACS survey

Salaries are highest for chemists who supervise

Number of subordinates	Median annual salaries,[a] chemists in private industry ($ thousands): All chemists	B.S.	M.S.	Ph.D.
ALL SUBORDINATES				
0	$31.2	$25.0	$30.7	$39.3
1–2	38.0	32.0	35.0	40.5
3–7	40.0	35.0	36.0	45.0
8–12	45.0	37.8	40.5	49.2
13–17	49.0	39.8	45.8	52.0
18–22	52.3	40.0	49.0	56.0
23–32	52.0	45.2	45.2	55.0
33–47	60.0	52.0	56.0	65.0
48–67	60.0	55.0	54.5	65.0
68–99	72.0	68.5	—	72.3
100 or more	70.0	65.0	60.0	74.3
PROFESSIONALS AND TECHNICIANS ONLY				
0	$32.0	$25.7	$31.0	$40.0
1–2	37.8	31.6	34.4	40.5
3–7	40.5	35.0	36.8	45.4
8–12	47.0	41.0	44.0	50.0
13–17	49.7	40.0	45.6	53.4
18–22	52.6	48.2	45.0	55.0
23–32	54.0	42.5	49.0	60.0
33–47	62.0	56.7	57.0	65.0
48–67	65.0	73.0	—	65.2
68–99	70.0	—	—	72.6
100 or more	73.6	—	55.0	75.8

a As of March 1, 1983. Source: ACS survey

pervise 50 or more people and roughly two thirds or less that of the 10% who have 20 or more people working for them. Age and experience probably are factors, of course, because the chemists who have greater managerial responsibilities are also likely, as a group, to be older than those with little or no supervisory duties.

The industry in which a chemist works also is a factor influencing earnings. Median salaries tend to be highest, as in the past, in the petroleum industry, where 7% of all industrial chemists work. Salaries are next highest in the chemical industry, which employs 31% of industrial chemists, for those with a B.S. or M.S. degree; for chemists with a Ph.D., the chemical industry ranks third, slightly behind the pharmaceutical industry, in salary level.

As in the past, chemical engineers responding to the annual ACS survey report salaries appreciably higher than those of chemists. For chemical engineers with no more than a B.S. degree, the median salary is $40,000 as of last March, a third higher than the median for B.S. chemists. Engineers with an M.S. had a median salary of $41,900, 27% above that of their chemist counterparts. Those with a Ph.D. report a median of $48,500, a little more than 20% above the median for chemists holding a Ph.D.

The two groups actually are not comparable, however. Because of the makeup of ACS membership, survey respondents who are engineers tend to be older and more experienced than those who are chemists. They are a relatively small fraction, as well—accounting for only 8% of the total survey sample—and one containing fewer women (nearly less than 5%) than is the case with chemists (14% of whom are women). According to a survey made among its members by the American Institute of Chemical Engineers, the median salary for all chemical engineers in 1982 was $39,000, compared to $42,000 for all chemical engineers responding to the 1982 ACS survey of its members. That's 12% higher than the 1982 median salary for all chemists of $34,700.

Results from this year's ACS survey indicate no change in median salaries from last year for chemical engineers whose highest degree is either an M.S. or a B.S. (The median for Ph.D. engineers this year was up 8% from 1982). This rather surprising result can be explained in part, however, by a difference in the sample responding to this year's survey compared to the 1982 survey sample. Chemical engineers responding to the 1983 survey are younger, on average, and this shift in age distribution causes the 1983 data for chemical engineers to be not fully

Salaries tend to be highest for chemists if they are men and if they are managers

Years since B.S. degree		Median salary of chemists ($ thousands)[a]										
		0–1	2–4	5–9	10–14	15–19	20–24	25–29	30–34	35–39	≥40	Overall
CHEMISTS EMPLOYED FULL TIME IN INDUSTRY												
Sex												
Men	B.S.	$20.4	$22.6	$27.3	$31.2	$37.0	$39.9	$43.0	$40.0	$40.0	$43.0	$33.0
	M.S.	—	24.3	28.0	32.0	38.0	40.2	46.0	43.2	44.0	45.0	37.0
	Ph.D.	—	—	35.0	39.1	44.6	50.0	52.0	55.0	54.0	57.0	45.0
Women	B.S.	20.5	22.4	23.0	26.5	27.0	31.8	(26.4)	35.0	36.0	(38.0)	24.5
	M.S.	—	25.0	25.0	31.5	31.4	(40.9)	(30.0)	(36.0)	(33.1)	—	29.0
	Ph.D.	—	—	35.0	37.2	39.0	40.4	(43.0)	—	—	—	36.8
Work function												
General management	B.S.	—	25.6	31.5	37.5	44.8	50.0	48.6	55.0	45.0	—	40.0
	M.S.	—	—	(32.0)	40.0	45.0	48.0	56.0	54.4	—	—	48.0
	Ph.D.	—	—	—	(45.0)	50.0	62.6	50.6	56.8	(55.0)	(63.0)	55.0
R&D management	B.S.	—	(24.3)	34.0	34.3	40.0	42.2	45.0	49.0	44.0	50.0	41.0
	M.S.	—	—	34.2	38.5	48.0	44.3	50.5	50.0	(52.5)	50.0	45.0
	Ph.D.	—	—	(38.0)	43.9	49.0	52.0	59.5	65.0	60.0	68.0	53.0
Basic research	B.S.	21.5	22.9	25.0	28.8	(29.3)	(28.5)	33.7	(31.0)	—	—	25.0
	M.S.	—	(25.0)	27.0	30.0	34.0	34.5	—	—	(51.0)	—	31.0
	Ph.D.	—	—	35.0	36.5	43.0	53.4	50.5	44.0	54.0	60.0	40.1
Applied research	B.S.	22.0	22.6	26.4	30.0	35.8	39.2	40.5	39.5	40.2	41.1	29.5
	M.S.	—	27.0	27.0	30.0	33.2	40.0	43.5	39.9	(40.0)	41.5	32.5
	Ph.D.	—	—	34.5	37.0	41.6	45.2	48.0	50.0	49.0	46.0	41.0
Work specialty[b]												
Agricultural chemistry	B.S.	—	20.5	24.0	34.0	38.5	40.0	—	41.1	(35.0)	(40.0)	32.9
	M.S.	—	—	—	(34.0)	(30.3)	(44.0)	(36.2)	(60.0)	—	(47.0)	37.1
	Ph.D.	—	—	33.0	35.4	41.0	48.0	(54.0)	52.0	—	(77.2)	42.3
Analytical chemistry	B.S.	18.7	23.0	25.8	28.2	36.0	34.0	40.0	39.5	40.4	45.4	28.3
	M.S.	—	24.7	27.9	30.5	36.2	37.5	42.9	40.0	39.0	(50.0)	34.0
	Ph.D.	—	—	34.3	38.0	42.2	48.0	47.3	56.8	54.0	47.2	40.7
Biochemistry	B.S.	—	22.0	23.2	—	—	—	—	—	—	—	24.0
	M.S.	—	—	(23.6)	—	—	—	—	—	—	—	30.0
	Ph.D.	—	—	(34.5)	37.0	39.9	(48.4)	52.9	61.5	(66.2)	(82.0)	41.8
Chemical engineering	B.S.	(26.3)	27.0	32.7	37.2	40.4	52.6	53.0	46.0	48.0	49.9	40.0
	M.S.	—	(32.0)	32.7	37.0	41.2	55.0	46.7	55.0	49.2	55.0	42.0
	Ph.D.	—	—	39.8	43.8	50.0	55.3	59.0	55.8	54.8	65.0	50.0
Environmental chemistry	B.S.	—	24.0	27.8	28.5	38.3	(39.0)	—	38.9	(32.0)	—	30.8
	M.S.	—	—	27.6	34.8	38.3	(41.0)	(42.3)	(36.0)	—	—	36.0
	Ph.D.	—	—	—	42.0	46.0	50.0	(46.0)	(50.0)	(51.8)	—	47.0
Inorganic chemistry	B.S.	—	(23.0)	26.2	33.0	—	(32.3)	50.0	44.0	—	—	31.4
	M.S.	—	—	(32.4)	(32.4)	—	—	(51.5)	(45.8)	—	—	40.4
	Ph.D.	—	—	35.0	39.6	42.6	52.0	(46.0)	(60.2)	—	(61.0)	41.4
Organic chemistry	B.S.	(22.2)	21.8	28.0	30.5	36.0	44.9	52.0	36.0	45.0	47.3	35.0
	M.S.	—	(22.0)	27.0	30.8	33.0	39.6	50.0	45.2	(46.5)	44.0	38.0
	Ph.D.	—	—	35.0	37.0	45.0	49.5	52.0	58.0	50.5	64.5	44.8
Pharmaceutical chemistry	B.S.	17.5	21.8	25.4	30.0	31.0	33.0	38.3	42.0	—	—	27.3
	M.S.	—	—	25.8	31.0	32.4	41.2	(35.5)	(40.0)	—	(45.0)	31.0
	Ph.D.	—	—	34.2	40.0	45.0	52.0	60.0	54.0	68.0	59.0	45.0
Physical chemistry	B.S.	—	—	—	—	—	(44.2)	—	(40.0)	—	—	38.0
	M.S.	—	—	(31.0)	—	(47.0)	—	—	(43.0)	—	—	36.2
	Ph.D.	—	—	37.0	40.5	45.6	49.0	52.3	49.5	54.0	56.5	45.0
Polymer chemistry	B.S.	20.1	23.0	27.0	33.2	37.8	40.0	44.5	47.0	40.6	43.0	34.0
	M.S.	—	(28.3)	30.9	34.3	35.5	42.2	42.0	44.5	44.5	39.5	37.4
	Ph.D.	—	—	35.0	41.0	45.0	50.0	54.5	56.5	55.0	51.0	46.0
CHEMISTS EMPLOYED FULL TIME IN ACADEMIC (Ph.D.s ONLY)												
Ph.D.-granting schools												
Professor		—	—	—	—	40.0	40.0	44.0	42.3	47.2	49.0	44.0
Associate professor		—	—	—	28.6	34.0	32.6	31.0	32.5	(33.0)	(42.0)	32.0
Assistant professor		—	—	23.6	25.0	24.3	25.9	(22.0)	—	—	—	25.0
Non-Ph.D.-granting schools												
Professor		—	—	—	—	28.5	30.7	32.0	32.0	32.7	33.0	31.3
Associate professor		—	—	—	21.5	24.5	26.0	29.5	25.3	—	—	25.0
Assistant professor		—	—	19.4	20.0	20.0	(20.7)	—	—	—	—	20.0

a As of March 1, 1983. b Refers to current work, not field in which degree was obtained. **Note:** Where no salary data are shown, sample is too small to provide meaningful figure; data in parentheses are from relatively small samples as well and should be treated with caution. **Source:** ACS survey

Joblessness for chemists highest in past decade

Employment status[a]	1983	1982	1981	1980	1979	1978	1977	1976	1975	1974
Employed full time	93.5%	94.9%	95.6%	95.9%	95.0%	95.7%	95.4%	94.7%	95.0%	95.1%
Employed part time	1.7	1.4	1.1	1.0	2.0	1.0	1.1	1.3	1.3	1.0
Postdoctoral or fellowship	2.6	2.2	2.2	2.2	1.9	1.9	2.1	2.2	2.0	2.5
Unemployed	2.2	1.5	1.1	0.9	1.1	1.4	1.5	1.9	1.6	1.4

a As of March 1; excludes unemployed chemists not seeking employment. **Source:** ACS survey

comparable with the 1982 data. Adjusting the 1983 mean (rather than median) salaries for chemical engineers to account for the difference in age distribution with last year indicates that overall salaries for chemical engineers with a B.S. are 4% higher and for those with an M.S. are 9% higher than the year before.

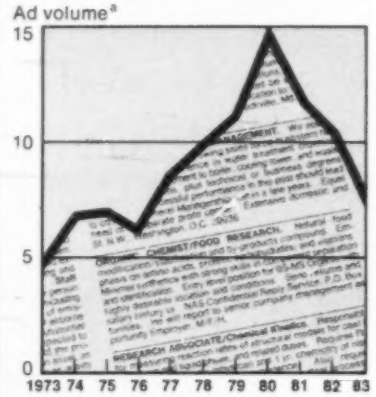
Overall, salaries for men continue to be greater on average than those paid to women. This year, in fact, the gap appears to be a bit wider than it was in 1982, at least for B.S. and Ph.D. chemists, after the raw data are adjusted for differences in years of experience between the two sexes. (In the overall survey sample, women as a group are younger than men.) Thus, on an age-adjusted basis, in industry women with a B.S. have a mean salary 85% that of men with a B.S.; last year their mean was 88% that of men. For Ph.D.s working in industry, the women's mean is 86% that of men this year, down from 96% the year before. Among Ph.D.s teaching in colleges and universities, the mean for women is 84% that for men this year, down from 89% in 1982.

As has been the case in recent years, the difference between salaries earned by men and women is small or nonexistent early in their careers. The median for men in industry with a B.S. obtained two to four years ago is $22,600; that for similar women is $22,400. The median is $35,000 for both men and women in industry who have a Ph.D. earned after obtaining a B.S. five to nine years ago. On the other hand, men in industry with a B.S. granted 20 to 24 years ago have a median salary that is 25% higher than women in the same category.

Women also are more likely to be jobless than men. This year, 3.3% were unemployed but seeking work, up from 2.8% in 1982 and 2.4% in 1981. Among men, 2.0% were similarly unemployed this year, up from 1.3% in 1982 and 0.9% in 1981. And although the unemployment rate is higher generally across the board, chemists with no more than a B.S. are more likely to be seeking work than those with an advanced degree. In the academic world, the unemployment rate is less than 1% for faculty other than instructors, for whom it is 4.6%.

But the worst may be over as far as the job market for chemists is concerned. Business clearly is improving now for the chemical industry. And classified employment advertising in C&EN, the leading U.S. outlet for such advertising aimed at chemists, also shows tentative signs of an upswing. The volume of help-wanted ads in C&EN had fallen erratically since it peaked about three years ago and hit a 10-year low last summer. It then recovered moderately last fall and winter, but turned down once more this spring. More recently, however, it has been increasing again, although to a level only about half of what it was early last year. It is still too early to judge how prolonged or substantial the rebound may be.

Volume of help-wanted ads down sharply since 1980



a Volume of help-wanted advertising (in thousands of column inches) in C&EN for the 12 months ending with May of each year.

Unemployment lowest in government, academia

	% in category	% unemployed[a]
MOST RECENT EMPLOYER		
Industry	61%	2.4%
College/university	24	1.5
Government	9	1.2
Other	6	3.8
MOST RECENT WORK FUNCTION		
R&D	37%	1.9%
Teaching	25	1.6
Management[b]	18	1.9
Marketing, production	12	3.0
Other	8	4.1
MOST RECENT WORK SPECIALTY		
Analytical	20%	2.4%
Organic	16	2.2
Polymer	12	2.8
Pharmaceutical	9	2.2
Biochemistry	8	1.3
Physical	8	2.0
Inorganic	6	1.4
Environmental	6	3.0
Agricultural	4	1.9
Other	10	2.4

a As of March 1, 1983; excludes unemployed chemists not seeking employment. b Includes R&D management. **Source:** ACS survey

These data on employment and salaries for ACS members are based on more than 12,000 responses to a mail survey carried out during March by the Office of Manpower Studies of the ACS Department of Professional Relations & Manpower Studies. The survey was made only among members who are 70 or younger, have a U.S. mailing address, are not retired, and are neither of student or emeritus status.

A full report on the annual survey, carrying much more detailed statistics than reported here, is being published this month. The report, "Salaries 1983," can be purchased at $60 per copy from the Distribution Office, Room 210, American Chemical Society, 1155—16th St., N.W., Washington, D.C. 20036. □